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Editorial

Endovascular Therapy for Complex Iliac Lesions: There Is Much More to Be Defined

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▸ See the article "Long-Term Clinical Outcomes of Iliac Artery Endovascular Therapy in the Korean Vascular Intervention Society Endovascular Therapy in Lower Limb Artery Diseases (K-VIS ELLA) Registry" in volume 52 on page 529.

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The iliac vessels are generally considered a good target for stent-based endovascular therapy due to their large caliber and freedom from arterial wall stresses influenced by leg movements. However, the conditions of iliac diseases substantially vary in terms of their anatomical complexity (unilateral or bilateral, short or diffuse, stenosis or occlusion, the presence or absence of heavy calcification) and also the disease extent in the runoff arteries, which can impact patency after revascularization. Based on the varying patency rates after open surgery and endovascular therapy according to these factors, the Trans-Atlantic Inter-Society Consensus (TASC) guidelines, in general, recommend an endovascular approach for TASC A and B lesions and a surgical approach for more complex TASC C and D lesions.[1] However, this recommendation was exclusively derived from non-randomized studies and included a relatively small number of patients. Over time, endovascular interventional devices and techniques have made significant progress, and many operators currently prefer an endovascular approach for most iliac lesions regardless of the patient's TASC classification and operative risk.[2][3] These "beyond the guideline" practice patterns therefore deserve further evaluation and validation.

In this issue of the *Korean Circulation Journal*, Roh et al.[4] report the clinical outcomes of TASC A through D iliac artery lesions after endovascular therapy using multicenter registry data held by the Korean Vascular Intervention Society (K-VIS). In total, 1364 patients underwent endovascular therapy in 1,705 limbs in the presence of intermittent claudication, resting ischemic pain or tissue loss, and a ≥50% stenosis of an iliac artery. TASC A, B, C, and D lesions were present in 19.4%, 26.2%, 28.7%, and 25.7% of the treated limbs, respectively. There was no difference between TASC lesion types regarding the technical success rate, whereas complications occurred more frequently in type D lesions. Overall, the five-year target-lesion revascularization-free survival was 89.2% and was lower in patients with TASC D lesions (79.3%) than in all other types (90–93%). A more symptom-oriented patency rate (defined as freedom from symptom aggravation supported by at least one adjunctive test) showed a similar trend. Interestingly, TASC D lesions were independent predictors of target-lesion revascularization in the overall cohort but were not in the stented cohort.

The authors should be recognized for performing this study with a large number of patients. Although this analysis provides data that support a positive view of endovascular therapy

Data Sharing Statement

The data generated in this study is available from the corresponding author upon reasonable request.

Author Contributions

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for iliac artery lesions, several limitations must also be acknowledged when interpreting the results. We should keep in mind that the endpoints of this study are not strictly patient-oriented or physio-anatomical ones. Suppose a patient had a symptom combined with significant restenosis at the treated iliac artery lesion but did not undergo another procedure. In that case, that patient was not counted in the target-lesion revascularization population. Also, the assignment of an additional procedure at the index lesion would be questionable without any symptoms and information from a non-invasive test that indicated restenosis. Because most landmark studies on the aortoiliac artery or other lower extremity arteries used the endpoint of "primary patency" as assessed on a regular duplex ultrasound basis, any comparison of the results of this study and published papers will therefore be difficult.[5)6)]

It is also important to note that many patients were lost to follow-up early after the index procedure. Endovascular therapy was performed between 2006 and 2015, but the median follow-up duration of the entire population was less than two years. Because it is reasonable to assume that complex TASC D lesions have a higher chance of suboptimal results than other types of TASC lesions, restenosis could be more noticeable beyond two years. Finally, this retrospective K-VIS registry recruited patients who underwent attempted endovascular therapy; thus, only lesions amenable to the procedure may have been selected. A stronger propensity of selection bias toward more complex TASC D lesions is likely inevitable.

Nevertheless, this study provides important insights into real-world endovascular therapy for iliac artery disease. Even with a potential selection bias, complex TASC D lesions consisted of 25% of the K-VIS retrospective cohort, which implies that a substantial proportion of TASC D lesions may apply to endovascular therapy. When led by expert interventional cardiologists,[7)] the technical success rate was >95% regardless of the TASC classification, and serious complications (such as vascular rupture or dissection) were infrequent even in TASC D lesions; most of them could be treated in an endovascular manner. Higher bleeding rates in TASC D lesions were predictable because of the need for a longer procedural time and a more frequent bidirectional approach than other TASC lesions. However, it is reasonable to think that the morbidity rate associated with endovascular therapy would be far lower than that of open surgery for patients with a similar surgical risk and iliac lesion complexity. Putting it all together, the recommendation of open surgery for TASC D iliac lesions from the most widely used TASC II guidelines does not seem to reflect real-world practice. Furthermore, the durability data of endovascular therapy used to establish the TASC II guidelines seems outdated as the concept for iliac artery stenting has evolved (intravascular ultrasound guidance, the type of stent, and optimization of medical therapy) over time.[8)9)] It may be time to rethink the anatomical criteria that can practically help physicians guide optimal treatment for patients with iliac lesions.

Although a randomized controlled trial of open surgery versus endovascular therapy for complex iliac artery lesions may be needed, it is unlikely to occur in the near future. Both open surgery and endovascular therapy for a given iliac lesion encompass a number of tools and approaches without a clear algorithm in many instances;[10)] thus, it would be difficult to develop a universal protocol and may be a source of significant bias. However, more importantly, there is a lack of consensus on the criteria of "complex" iliac artery lesions that are amenable to both open surgery and endovascular therapy subject to the investigation of durability and safety. For now, we will have to start with studies, preferably those that use a well-designed prospective registry and incorporate state-of-the-art surgical and endovascular concepts, to define sensible anatomical factors that affect the durability of each treatment modality.

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